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TECHNICAL NOTES

LAKE STATES FOREST EXPERIMENT STATION UNIVERSITY FARM ST. PAUL 1, MINNESOTA

No. 353

Early Release from Aspen Improves Yield of Pine Plantations

Pine plantations overtopped by aspen will lose much of their potential wood production if they are not released early, according to a study made by the Station in the Birch Lake plantation near Ely, Minnesota.

This 90-acre burn on the Superior National Forest was planted to red pine in 1915 and 1917. But aspen came in, and by 1931 it had overtopped five-sixths of the plantation. A survey at that time showed that one-sixth of the plantation needed no release, a like portion was beyond salvage, and two-thirds consisted mostly of an aspen overstory with pines underneath, many badly suppressed. Sample plots representing two degrees of release and check areas were established. During the following winter (15 to 17 years after planting), part of the area where pines were overtopped was given complete release at a cost of \$2.75, or one man-day, per acre. A comparison of the released plots with the untreated check and the portion of the plantation needing no release was made in 1949, 18 years after treatment. This brings out these facts (see table below):

| Treatment | Cordwood volume per acre (3 inch top utilization) | | | | | | Total stumpage value ^{1/} |
|-------------------|--|---------|-------|--------------|---------|-------|--|
| | 1931 | | | 1949 | | | |
| | R.P. | 'Aspen' | Total | R.P. | 'Aspen' | Total | |
| | <u>Cords</u> | | | <u>Cords</u> | | | |
| None | 1.9 | 5.9 | 7.8 | 16.2 | 15.6 | 31.8 | 40.20 |
| Moderate release | 2.2 | 0.6 | 2.8 | 20.2 | 8.0 | 28.2 | 44.20 |
| Full release | 1.6 | 0.1 | 1.7 | 23.7 | 2.2 | 25.9 | 48.50 |
| No release needed | 1.9 | - | 1.9 | 32.9 | 0.3 | 33.2 | 65.95 |

^{1/} Based on red pine at \$2.00 and aspen at \$0.50 per cord.

(1) Even delayed release increased the volume of pine cordwood. (The difference was much less than it would have been if much of the aspen on the check plot had not been killed by a tent caterpillar epidemic.)

(2) The plot needing no release (comparable to a plantation released promptly) had much more red pine cordwood than any of the others despite the fact that it is two years younger. If clear cut today it would yield 25 to 40 percent more cash return than the plots where release was long postponed. The study shows that to obtain the greatest dividends from over-topped plantations, release must be done at an early age.